Title (en)

Method for detecting physico-chemical properties of a petroleum sample starting from two-dimensional gas chromatography

Title (de)

Verfahren zur Detektierung physikochemischer Eigenschaften einer Erdölprobe ausgehend von zweidimensionaler Gaschromatographie

Title (fr)

Procédé pour déterminer des propriétés physico-chimiques d'un échantillon pétrolier à partir de chromatographie en phase gazeuse bidimensionnelle

Publication

EP 2120047 A1 20091118 (FR)

Application

EP 09290305 A 20090424

Priority

FR 0802637 A 20080514

Abstract (en)

The process comprises determining quantities of compound present in the mixture by chromatography in two-dimensional gaseous phase, and determining the physical property of a relation f, which is primarily calibrated, from determined quantities. The relation f is calibrated by determining the quantity of compound present in the second mixture containing the molecular compounds, measuring the physical property of the second mixture, initializing the co-efficient that affect the known value of the physical property for a sample containing the compound. The process comprises determining quantities of compound present in the mixture by chromatography in two-dimensional gaseous phase, and determining the physical property of a relation f, which is primarily calibrated, from determined quantities. The relation f is calibrated by determining the quantity of compound present in the second mixture containing the molecular compounds, measuring the physical property of the second mixture, initializing the co-efficient that affect the known value of the physical property for a sample containing the compound, calculating the physical property of the function f, and modifying the co-efficient to minimize a difference between calculated physical property value and measured physical property. The relation f is defined by, P m=f(alpha i, Q i, n), where P mis physical property, n is number of molecular compound separated by chromatography, alpha iis a co-efficient calibrated and associated to a compound i and Q iis quantity of compound i determined by chromatography, and further defined by, f(alpha i, Q i, n)=Sum of alpha iQ i. The chromatography is carried out by recording a chromatographic signal comprising chromatographic peaks, generating a two dimensional chromatogram, whose each column corresponds to a portion of the chromatographic signal, defining shading using polygons, adjusting the polygons, identifying the portions of the chromatographic signal comprising between the intersections of polygons with the chromatographic columns, determining the flow time, end time and maximum peaks present on the portions, displacing the point of intersection in function of the flow time, end time and maximum peaks, and determining a quantity of a molecular compound by calculating the molecular compound of adjusted polygon. The chromatographic peaks form shading on the chromatogram. The quantity of compound is determined by estimating the concentration of part of area of polygon. The physical property are combustion property including octane index, hexadecane index, point of fusion and density, and cooling property including temperature limit for filterability, turbidity, flow point and temperature for crystal disappearance. The sample is distillated at a temperature of 150-450[deg] C.

Abstract (fr)

- Procédé pour déterminer des propriétés physico-chimiques d'un échantillon pétrolier à partir de chromatographie en phase gazeuse bidimensionnelle. - On détermine les quantités de n composés moléculaires présents dans l'échantillon, au moyen d'une chromatographie en phase gazeuse bidimensionnelle. Puis, on détermine au moins une propriété physique, tel que l'indice d'octane, à partir de ces quantités. Pour ce faire on utilise une relation préalablement calibrée, qui relie la propriété physique aux quantités.

IPC 8 full level

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CPC (source: EP US)

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